

## **REMARKS/ARGUMENTS**

Claims 1, 3, 5, 7-12, 14-15, 17, 19, 21-26, and 28-48 are pending in the application; claims 5, 7-12, 19, 21-26, and 29-45 are withdrawn. Claim 49 is cancelled. Claims 1, 3, 14, 15, 17, 28, and 48 are rejected under 35 U.S.C. §103(a) over U.S. Patent No. 4,093,512 to Fleischer ("Fleischer") in view of U.S. Patent No. 3,800,019 to Parsey ("Parsey") or U.S. Patent No. 6,653,943 to Lamb ("Lamb"). Claims 1, 3, 14-15, 17, 28 and 48 have been rejected under 35 U.S.C. §103(a) over Fleischer in view of "Applicant's Disclosure" and Parsey or Lamb. For the reasons set forth below, we traverse and respectfully request reconsideration and withdrawal of the rejections.

Claims 1, 3, 14, 15, 17, 28 and 48 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 4,093,512 to Fleischer (hereinafter merely "Fleischer") in view of any one of U.S. Patent No. 3,800,019 to Parsey or U.S. Patent No. 6,653,943 to Lamb.

The Office Action maintains the rejections combining Fleischer with Parsey or Lamb  
Independent claims 1 recites:

"A papermaking fabric multilayer monofilament, **said multilayer monofilament having a core and a sheath comprising a plurality of respective layers visibly distinguishable from one another and the core by their contrasting color, or reflectivity** for indicating a level of wear of a papermaking fabric comprised thereof, **wherein said multilayer monofilament is formed before being used in said papermaking fabric.**" (Emphasis added).

Independent claims 15 and 48 recite: "one or more **multilayer [mono]filaments each having a core [and a sheath] [comprising/comprised of a monofilament yarn surrounded by] a plurality of respective layers visibly distinguishable from one another and the core by their contrasting color, or reflectivity** for indicating a level of wear, **wherein said multilayer monofilament is formed before being used in said endless industrial fabric.**

The claims recite a multilayer monofilament for use in a papermaking fabric. The multilayer monofilament is formed of a core and a plurality of layers that are distinguishable from each other and the core. Declaration of Francis L. Davenport ("Davenport Declaration") ¶ 9. The multilayer monofilament, as recited in the instant claims, takes its final form before being used in a papermaker's fabric. Davenport Declaration ¶ 9.

For example, FIG. 4 of the Instant Application is a plan view of an unused fabric 20 (wear side) comprising at least some of the multilayered filaments 10, according to the teachings of the present invention. Davenport Declaration ¶ 10. Fabric 20 can be a structure woven from yarns 10 lying in the cross-machine direction (CD) and yarns 22 lying in the machine direction (MD), although it need not be woven to fall within the scope of the present invention, and could be a nonwoven structure. Davenport Declaration ¶ 10. In FIG. 4, CD yarns 10 which are multilayered filaments of the variety shown in FIGS. 1, 2 and 3 are depicted as weaving with MD yarns 22 in a plain weave. Davenport Declaration ¶ 10. In the example shown, the knuckles 24 on the surface of the fabric 20 are most susceptible to wear because they are formed where a yarn in one direction of the fabric 20 passes or crosses over one in the other direction, and are therefore elevated points on the surface of the fabric 20. Davenport Declaration ¶ 10.

After the fabric 20 has been used for some period of time, the same plan view of the fabric 20 will appear as shown in FIG. 5. Davenport Declaration ¶ 11. At least one or more of the outer layers 16, 18 of the CD multilayered filaments 10 are shown to be worn away to the point where an inner layer 14 or the core 12 is exposed to view. Davenport Declaration ¶ 11. By virtue of its different color or reflectivity, for example, compared to that of the outer layers 16, 18, the inner layer 14 or core 12 gives an indication of the level of wear of the fabric 20. *Instant Application*, paragraphs [0027] and [0028]. Davenport Declaration ¶ 11.

Because these fabrics have a limited lifespan and require regular replacement, there needs to be a means to indicate the wear level in the fabric, so that the fabric can be replaced in time, avoiding any catastrophic failure and loss, damage or shutting down of the machines. Davenport Declaration ¶ 12. Moreover, because these industrial fabrics have a width of from 5 to over 33 feet, a length of from 40 to over 400 feet and weigh from approximately 100 to over 3,000 pounds, replacement of these fabrics often involves taking the machine out of service, removing the worn fabric, setting up to install a fabric and installing the new fabric. Davenport Declaration ¶ 12. And because these fabrics are typically made to order, it is important to know the condition of the fabric being currently used on the paper machine. Davenport Declaration ¶ 12. In the instant invention the individual monofilament yarn comprises the core and is surrounded by a **plurality of respective layers**. See *Instant Application*, page 6, lines 3-17. Davenport Declaration ¶ 12. These plurality of layers, which can be dyes as recited in the specification, act as level indicators for wear of the industrial fabric e.g. a green color used as an outermost coating

of the filament will indicate a healthy fabric, and a red color used as an innermost coating of the core filament would call for a replacement. Davenport Declaration ¶ 12.

As to Fleischer, although it discloses that its load bearing elements can be monofilaments (col. 3, lines 27-56), there is no further discussion regarding the structure of this monofilament in the rest of Fleischer's disclosure. Davenport Declaration ¶ 13. The only yarn structure that Fleischer later discloses in col. 4 is coated using a two step resin treatment by first applying a thermosetting acrylic resin and then a phenolic resin (*Fleisher*, col. 4, lines 37-50). Davenport Declaration ¶ 13. However, an ordinarily skilled artisan would understand that the coating method suggested for applying the resin in Fleischer is that as described in Christie et al, U.S. Patent Nos. 3,252,821 and 3,149,003, both of which teach **coating the fabric itself** and **not** the monofilament. *Fleisher* at col.4 line 53- col. 5, line 6. Davenport Declaration ¶ 13. While coating the fabric might cover one side of the monofilaments, the knuckles of the fabric where the warp and weft intersect, are certainly not going to have the same multilayer coated structure: nor, more importantly, is there assurance of uniformity. Davenport Declaration ¶ 13. Accordingly, the cited reference fails to disclose or predict the use of monofilaments that are first coated and then used to make the fabric. Davenport Declaration ¶ 13.

Nonetheless, the Office Action alleges that coating the monofilaments before forming the fabric renders the article identical, or only slightly different from Fleischer's fabric. Applicants disagree, and respectfully urge that the rejection is in error. Davenport Declaration ¶ 14.

Fleischer's two step resin treatment coating the fabric itself, unlike the claimed monofilament coated before forming the fabric, would result in a fundamentally different product with respect to indicating a level of wear. Davenport Declaration ¶ 15. As explained in the prior response, Fleischer's post-fabric coatings would fail to, inter alia, (a) cover the whole monofilament (hence failing to layer or sheath it) and (b) non-uniformly coat the filaments at the knuckles where warp and weft intersect. Davenport Declaration ¶ 15. In actual use either or both of the lack of coverage and irregularity of the applied coatings make them ill-suited to be adapted to detect wear via any visual distinction between the respective layers and the core, and in fact doing so would likely confuse, rather than aid, detection of a level of wear. Davenport Declaration ¶ 15.

Moreover, Fleischer's objective is to produce a papermakers' belt with ultra high modulus load bearing yarns such that the belt has improved stretch resistance. Davenport Declaration ¶

16. As pointed out in Applicants' Response dated June 22, 2007, Fleischer attempts to achieve an improvement in tensile strength and stretch resistance of forming fabrics woven from multifilaments by employing high tenacity materials. Fleischer, col. 4, line 53 – col. 5, line 6 Davenport Declaration ¶ 16. Those of ordinary skill in the art, however, know that materials like Kevlar have very poor abrasion resistance when used in papermaking fabrics, and therefore in order to survive, these materials **must be wrapped and/or coated**. Davenport Declaration ¶ 16.

One objective of the above-claimed invention, contrariwise, is to give the papermaker an idea of how and to what levels the wear or at what rate the wear is occurring before catastrophic failure occurs. Davenport Declaration ¶ 17. If the coating on the Kevlar yarn of Fleischer is gone, the fabric is in imminent failure mode, therefore providing for all or nothing. Davenport Declaration ¶ 17. On the other hand, with the present invention the papermaker is alerted to, in advance, the state of the papermaking fabric with the plurality of layers indicating a level of fabric wear, such that the papermaker could replace it with a new fabric in case of a worn out state, thus avoiding a catastrophic failure and subsequent repair/losses. Davenport Declaration ¶ 17. As a result, an ordinarily skilled artisan would have no reason to adapt Fleischer's coated filaments with contrasting color or reflectivity as this would provide no effective warning at all. Davenport Declaration ¶ 17.

Further, despite the fact that Fleischer states that its yarn can be of multifilament or monofilament form, an ordinarily skilled artisan would appreciate **that at present no such material exists in monofilament form with the modulus specified that can be used in paper machine clothing that also has the other required characteristics (flexibility, abrasion resistance etc)**. Davenport Declaration ¶ 18. The only materials that exist are multifilaments such as the aramids Fleischer expressly teaches, **which is to be expected as they cannot be made into monofilament form**. Davenport Declaration ¶ 18. Quite simply, no such "Ultramono" exists for the claimed invention. And again, if Fleischer's coating or wrapping wears away, the aramids have such poor abrasion resistance that **they will catastrophically fail**. Davenport Declaration ¶ 18.

Following the decision by the Supreme Court of the United States in *KSR*, 550 U.S. \_\_\_, 82 U.S.P.Q.2d 1365 (2007), the analogous art requirement remains an important part of the primary analysis under *Graham v John Deere Co. of Kansas City*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966). As recently re-stated by the Board of Patent Appeals and Interferences, the analogous-

art test requires the Board to show that a reference is either in the field of the applicant's endeavor or is reasonably pertinent to the problem with which the inventor was concerned in order to rely on that reference as a basis for rejection. *Ex Parte Bartly et al.*, 2008 WL 275524 (Bd.Pat.App. & Interf. 2008) (Appeal No. 2007-2583). The Board has further explained that:

In view of KSR's holding that "any problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the matter claimed" [citation omitted] it is clear that the **second part** of the analogous-art test as stated [above] must be expanded to require a determination of **whether the reference**, even though it may be in a different field from that of the inventor's endeavor, is one which, because of the matter with which it deals, **logically** would have commended itself to an artisan's (not necessarily the inventor's) attention in considering **any need or problem** known in the field of endeavor. *Id.*, at 2008 WL 275525 (emphasis added).

Turning to Parsey and Lamb, an ordinarily skilled artisan would not turn to the Parsey or Lamb to cure the deficiencies of Fleischer as the rope structures of Parsey and Lamb are not similar or analogous to the claimed invention. Davenport Declaration ¶ 19.

Parsey teaches a rope structure constructed from a core of at least one bundle of filaments, wherein the core may be bound by a steel tape or wire or sheathed with two organic coatings of different colors. Davenport Declaration ¶ 20. In these configurations, damage or wear to the rope can be detected by measuring the resistance between the steel binding means or by a change in the color on the outside of the rope. See *Parsey*, col. 1, line 39 - col. 2, line 29. Davenport Declaration ¶ 20. As used in *Parsey*, a bundle is used "to denote a group of filaments arranged in parallel fashion. Such a group may be assembled by combining together without twisting a number of filamentary yarns to produce the larger bundle required for a rope core." *Parsey*, col. 3, lines 50-55. Davenport Declaration ¶ 20. Therefore, *Parsey* teaches a bundle or plurality of filaments that are sheathed, not a core comprised of a single yarn that is surrounded by a plurality of respective layers. Davenport Declaration ¶ 20.

Lamb is directed to suspension ropes having polyurethane sheaths as used, for example, in an elevator assembly. *Lamb*, col. 2, lines 26-28. Davenport Declaration ¶ 21. As depicted in Figure 1a, the suspension or wire rope 4 is constructed from a wire rope that includes a **plurality of load supporting wire members or strands**. *Lamb*, at col. 3, lines 16-20. Davenport Declaration ¶ 21. In various embodiments, the wire rope in its entirety (which includes the

plurality of wires or strands) is encased in sheaths of materials having differing properties where the properties of the sheath material are used to detect an amount or wear on the suspension rope. Davenport Declaration ¶ 21. Therefore, Lamb teaches a plurality of wire members or strands that are sheathed, whereas the instant invention teaches a core comprised of a single yarn that is surrounded by a plurality of respective layers. Davenport Declaration ¶ 21.

The structures and uses of Lamb and Parsey's rope structures are not similar or analogous to those of the claims, and an ordinarily skilled artisan would not turn to them for solutions. Davenport Declaration ¶ 22.

The claims recite a multilayer filament having a core comprised of a single yarn surrounded by a plurality of respective layers that are used to indicate the level of wear of an industrial fabric constructed therefrom. Davenport Declaration ¶ 23. Parsey, in contrast, is directed to a rope structure constructed from a core of at least one bundle of filaments, wherein the core may be bound by a steel tape or wire or sheathed with two organic coatings of different colors. Davenport Declaration ¶ 23. Lamb, in contrast, is directed to suspension ropes having polyurethane sheaths as used, for example, in an elevator assembly. Davenport Declaration ¶ 23. Neither Parsey nor Lamb are within the field of an ordinarily skilled artisan's endeavor. Parsey relates to rope structures and Lamb relates to suspension ropes. Davenport Declaration ¶ 23.

Secondly, Parsey and Lamb are not reasonably pertinent to the particular problem with which the instant inventors were involved. Davenport Declaration ¶ 24. As previously stated, Parsey relates to rope structures and Lamb relates suspension ropes. Davenport Declaration ¶ 24. In contrast, the instant invention is directed to problems associated with wear of an industrial fabric, which is subject to wholly different kinds of stresses and wear, explained above, than those for ropes. Davenport Declaration ¶ 24. Moreover, it is not a further product made from these ropes that needs wear detection, and indeed, these ropes are not woven or formed into another product at all. Davenport Declaration ¶ 24. They are not yarns. Davenport Declaration ¶ 24. It is clear that the matters with which Parsey and Lamb are concerned would **not** logically have commended themselves to an ordinarily skilled artisan's attention in considering any problem, including the problem to be solved by the instant invention. Davenport Declaration ¶ 24.

The claimed structures are quite different than those of Lamb and Parsey. The claims are directed to filaments that are used to detect wear in an industrial fabric. Davenport Declaration

¶ 25. In contrast, neither Parsey nor Lamb perform a function similar to detecting wear of an industrial fabric. Davenport Declaration ¶ 25. Instead Parsey relates to detecting wear of rope structures comprised of bundles of filaments and Lamb relates to detecting wear of suspension ropes for use in, for example, elevator assemblies. Davenport Declaration ¶ 25.

The Final Office Action denies that Parsey and Lamb are non-analogous art, despite the fact that each relates to rope structures and neither of them teach or suggest use of a monofilament. Davenport Declaration ¶ 26. First, the Office Action improperly states that Applicants said Parsey strictly relates to elevator ropes. As shown at page 12 of our prior Amendment and Response, we stated Parsey and Lamb relate to rope structures. However, insofar as the Examiner is citing to the *KSR v. Teleflex* (“KSR”) case for the proposition that a technique has been used to improve one device – then it is proper to look at the **devices** actually disclosed in Parsey and Lamb to determine if either is indeed similar. One of ordinary skill in the papermaking art would not look to rope-making generally, or into elevator suspension ropes or marine water cordages specifically, to come up with a solution for wear in papermaking fabrics. Davenport Declaration ¶ 26. A papermaking fabric is not similar to a rope. Davenport Declaration ¶ 26.

Along the same lines, at page 3, the Office Action states Parsey (at Col. 2, lines 8-29) and Lamb (at Col. 4, lines 20-35), “each disclose that it is known in the wear detecting art that a core may be surrounded by a plurality of outer layers of different colors to indicate degree of wear.” Davenport Declaration ¶ 27. Of course, neither of these references refer to nor even imply a “wear detecting art,” because there is no such thing. Davenport Declaration ¶ 27. To the contrary, and as amply explained in prior responses, Parsey and Lamb are concerned with rope-making, and not industrial fabrics, and far less so papermaking fabrics. In particular, the references disclose sheathing (and re-sheathing) a rope to detect wear of a rope, not a yarn, and certainly not a monofilament. Davenport Declaration ¶ 27. An ordinarily skilled artisan simply would not look to ropes – be they for elevators or marine cordage – as a material to make papermaking fabrics out of, or to seek solutions for problems associated with papermaking fabrics. Davenport Declaration ¶ 27. .

Finally at page 5, the Office Action employs hindsight reasoning to supply a reason for its application of *Fleischer*, noting that “Applicant discloses that a means for monitoring wear on a papermaker’s fabric, and particularly at any point on its inner and outer surfaces, even when

the paper machine is operating, would be very helpful to those in the papermaking industry. Davenport Declaration ¶ 28. Applicants respectfully note that *KSR* cautions that hindsight reasoning based on the Applicants' own disclosure distorts analysis: "[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant on ex post reasoning." Emphasis added. As MPEP 2174 "Legal Concept of Prima Facie Obviousness" states:

[T]o reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. **Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.**

Emphasis added. Indeed Applicants do not deny that its claimed invention is very helpful to those in the papermaking industry. Davenport Declaration ¶ 28. Moreover, the Specification also explained that "[n]ormally, wear is monitored using a thickness gauge. However, it is difficult to measure the thickness of a papermaker's fabric more than a foot or two in from its edges with such a gauge...." Davenport Declaration ¶ 28. The Specification simply shows that the Applicant identified and provided a solution to the long-felt need of monitoring-wear that was inadequately met by prior art gauges. If anything, the prior art shows that the approaches taken before that disclosed were of a difference character (gauges). Davenport Declaration ¶ 28.

For the reasons given above, neither Fleischer, Parsey, Lamb, nor the Applicants' own disclosure, alone or in combination, disclose or render obvious the above-recited limitations of independent claims 1, 15 and 48. As all the claims ultimately depend from these independent claims, and as none of the cited art of record cures the deficiency of Fleischer, Parsey, and Lamb as applied to the independent claims, Applicants urge all the claims are presently in condition for allowance. See Davenport Declaration ¶ 29.



**CONCLUSION**

In view of the foregoing amendments and remarks, all of the claims in this application are patentable over the prior art, and early and favorable consideration thereof is solicited.


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If any issues remain, or if the Examiner has any further suggestions, the Examiner is invited to call the undersigned at the telephone number provided below. The Examiner's consideration of this matter is gratefully acknowledged.

Respectfully submitted,

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**APPENDIX**